

WHAT IS CLAIMED IS:

1 Apparatus for applying a flowable adhesive to se-
2 lected portions of a running web of wrapping material
3 for smokers' products, comprising:
4 at least one source of adhesive;
5 an applicator having at least one adhesive-dis-
6 charging orifice adjacent a course for the running web;
7 means for connecting said at least one source with
8 said applicator; and
9 means for regulating - including interrupting - the
10 flow of adhesive in said connecting means, comprising at
11 least one rotary valve.

1 2. The apparatus of claim 1, wherein said at least
2 one valve includes a valve body and at least one rotor
3 disposed in and having a peripheral surface defining with
4 said body at least one arcuate path for the flow of
5 adhesive from an inlet to an outlet of said at least one
6 valve, said peripheral surface including at least one
7 irregularity arranged to influence the flow of adhesive
8 from said inlet to said outlet.

1 3. The apparatus of claim 2, wherein said at least
2 one irregularity includes at least one of (a) at least
3 one recess, (b) at least one groove, (c) at least one
4 projection, and (d) at least one lobe.

1 4. The apparatus of claim 2, wherein said body
2 includes a housing having a chamber for said at least
3 one rotor.

1 5. The apparatus of claim 1, wherein said applicator
2 has at least one adhesive storing chamber communi-
3 cating with said at least one orifice.

1 6. The apparatus of claim 1, wherein said at least
2 one orifice has at least one parameter, including the
3 depth and the capacity thereof, which is variable to thus
4 influence the quantity of adhesive being applied to the
5 web by said applicator.

1 7. The apparatus of claim 1, wherein said orifice
2 is adjustable.

1 8. The apparatus of claim 1, wherein said
2 applicator has a first width, said at least one orifice
3 has a second width, and at least one of said widths is
4 adjustable.

1 9. The apparatus of claim 1, wherein said
2 applicator has an arcuate web-contacting surface adjacent
3 said course for the web.

1 10. The apparatus of claim 1, further comprising
2 means for varying the pressure of adhesive in said con-
3 necting means.

1 11. The apparatus of claim 1, wherein said applicator includes a plurality of nozzles each having at least one adhesive-discharging orifice adjacent said course for the web, said connecting means including discrete conduits each connecting said at least one source with a different one of said nozzles, and further comprising means for individually selecting the pressure of adhesive in at least two of said conduits.

1 12. The apparatus of claim 1, wherein said applicator includes at least two nozzles each having at least one adhesive-discharging orifice adjacent said course, said connecting means including at least two conduits each connecting said at least one source with a different one of said nozzles, and further comprising means for maintaining the pressure of adhesive in one of said at least two conduits at a value which at least approximates the pressure of adhesive in the other of said at least two conduits.

1 13. The apparatus of claim 12, wherein said con-
2 necting means further includes an additional conduit com-
3 municating with said at least one source, said at least
4 two conduits having inlets communicating with said addi-
5 tional conduit and said pressure maintaining means in-
6 cluding at least one pump disposed in said additional
7 conduit upstream of said inlets of said at least two con-
8 duits.

1 14. The apparatus of claim 1, wherein at least
2 a portion of said applicator has a coat of a material
3 opposing accumulations of adhesive on the applicator.

1 15. The apparatus of claim 1, further comprising
2 means for monitoring at least one variable parameter of
3 adhesive on the web.

1 16. The apparatus of claim 1, wherein said moni-
2 toring means includes means for ascertaining the quantity
3 of adhesive being applied to the web.

1 17. The apparatus of claim 15, wherein said
2 monitoring means includes means for generating signals
3 denoting the monitored at least one parameter, and
4 further comprising means for adjusting at least one of
5 said source, said applicator, said connecting means and
6 said regulating means as a function of said signals.

1 18. The apparatus of claim 1, wherein said applicator
2 comprises a plurality of nozzles each having at
3 least one orifice and said regulating means comprises
4 a rotary valve for each of said nozzles, each of said
5 valves including a valve body and a rotor disposed in
6 and having a peripheral surface defining with said body
7 at least one arcuate path for the flow of adhesive from
8 an inlet to an outlet of the respective valve, said
9 peripheral surface of each rotor including at least one
10 irregularity arranged to influence the flow of adhesive
11 from the inlet to the outlet of the respective valve.

1 19. The apparatus of claim 18, wherein each of
2 said peripheral surfaces is provided with a plurality
3 of irregularities.

1 20. The apparatus of claim 1, further comprising means
2 for advancing the web along said course at a first speed,
3 means for rotating a rotor of said valve at least one valve
4 at a second speed, and means for synchronizing the
5 operation of said advancing means with the operation of
6 said rotating means.

1 21. The apparatus of claim 1, comprising at least
2 two sources respectively containing different first and
3 second adhesives, said applicator including first and
4 second nozzles each having at least one orifice adjacent
5 said course for the web and said connecting means
6 including at least one first conduit arranged to convey
7 first adhesive from the respective source to said first
8 nozzle and at least one second conduit arranged to convey
9 second adhesive from the respective source to said second
10 nozzle.

1 22. The apparatus of claim 1, wherein said valve
2 has a hollow stator and a rotor rotatable in said stator
3 about a predetermined axis, said stator and said rotor
4 defining an arcuate groove disposed in a plane normal
5 to said axis and extending from an inlet to an outlet of
6 said valve.

1 23. The apparatus of claim 22, wherein said groove
2 extends along an arc approximating but less than 360°.

1 24. The apparatus of claim 1, wherein said
2 applicator includes a plurality of nozzles each having
3 at least one orifice and each adjacent a different por-
4 tion of said course, said connecting means including a
5 plurality of conduits, at least one for each of said
6 nozzles and each connecting said source with the respect-
7 ive nozzle.

1 25. The apparatus of claim 24, wherein said source
2 includes a plurality of discrete sources of different
3 adhesives, said conduits including at least two conduits
4 connecting one of said discrete sources with the
5 respective nozzles.

1 26. The apparatus of claim 24, wherein said
2 regulating means includes a plurality of valves each
3 having a hollow body and a rotor turnable in the
4 respective body about a predetermined axis, each rotor
5 having a peripheral surface defining with the respective
6 body a path leading to one of said nozzles, said bodies
7 and said rotors cooperating to confine the adhesive to
8 flow to the respective nozzles.

1 27. The apparatus of claim 26, wherein said rotors
2 constitute substantially disc-shaped sections of a rotor
3 which is common to all of said valves, said hollow
4 bodies forming part of a stator common to and surrounding
5 all of said disc-shaped sections, the peripheral surface
6 of each of said disc-shaped sections having at least one
7 irregularity arranged to influence the flow of adhesive
8 within the respective hollow body.

1 28. The apparatus of claim 27, wherein at least
2 one of said disc-shaped sections cooperates with the res-
3 pective hollow body to establish a seal against leakage
4 of adhesive from the respective valve.

1 29. The apparatus of claim 26, wherein said hollow
2 bodies have internal surfaces surrounding said rotor
3 and provided with arcuate grooves for the flow of
4 adhesive along the respective paths, said grooves having
5 centers of curvature on said axis.

1 30. The apparatus of claim 29, wherein at least
2 one of said grooves extends along an arc approximating
3 but less than 360° .

1 31. The apparatus of claim 24, wherein at least
2 one of said nozzles has at least one adhesive-storing
3 chamber communicating with the respective at least one
4 orifice.

1 32. A method of applying adhesive to selected por-
2 tions of one side of a web of wrapping material for
3 smokers' products, comprising the steps of:

4 advancing the web lengthwise along a predetermined
5 course;

6 placing first and second nozzles adjacent the one
7 side of the web in a predetermined portion of said course;

8 establishing first and second sources respectively
9 containing first and second flowable adhesives;

10 conveying adhesives from said first and second
11 sources to said first and second nozzles; and

12 utilizing the first and second nozzles for the
13 application of first and second adhesives to said se-
14 lected portions of one side of the web in said course.

1 33. The method of claim 32, wherein said conveying
2 step includes inducing the flow of first and second
3 adhesives to the respective nozzles along discrete first
4 and second paths.

1 34. The method of claim 32, wherein said utilizing
2 step includes intermittently applying at least one of
3 the adhesives to the one side of the web in said course.

1 35. The method of claim 34, wherein said step of
2 intermittently applying at least one of the adhesives
3 includes regulating the flow of the at least one adhesive
4 by a rotary valve.

1 36. The method of claim 32, wherein said conveying
2 step includes utilizing at least one pump for each of
3 the first and second adhesives.

1 37. The method of claim 32, wherein said conveying
2 step includes conveying the first and second adhesives
3 along discrete first and second paths, and further com-
4 prising the step of introducing at least one additive
5 into the adhesive in at least one of the first and second
6 paths.

1 38. A method of making rod-shaped smokers' pro-
2 ducts wherein a tubular envelope confines smokable
3 material and at least a portion of the envelope consists
4 of a section of a web one side of which is at least
5 partially coated with at least one film of an adhesive,
6 comprising the steps of:

7 advancing the web lengthwise along a predetermined
8 course;

9 establishing at least one source of flowable ad-
10 hesive;

11 positioning an orifice of at least one nozzle
12 adjacent a portion of said course at the one side of the
13 web;

14 conveying adhesive along at least one path extend-
15 ing from the at least one source to the at least one
16 nozzle; and

17 regulating the flow of adhesive in said path,
18 including employing at least one rotary valve.

1 39. A method of making rod-shaped smokers'
2 products wherein a tubular envelope confines a smokable
3 material and at least a portion of the envelope consists
4 of a section of a web one side of which is at least
5 partially coated with at least one film of adhesive,
6 comprising the steps of:

7 advancing the web lengthwise along a predetermined
8 course;

9 positioning orifices of at least two nozzles
10 adjacent a portion of said course at one side of the web;

11 establishing at least two sources of flowable ad-
12 hesive; and

13 conveying flowable adhesive from each of the
14 sources along a discrete path to a different one of said
15 nozzles.

1 40. The method of claim 39, further comprising
2 the step of maintaining the adhesives in said paths at
3 different pressures.

1 41. As a novel article of manufacture, a rod-
2 shaped smokable product including a smokable filler and
3 a tubular envelope consisting at least in part of a
4 section of a web having one side at least partially coat-
5 ed with at least one film of adhesive, said at least one
6 film containing at least two different types of adhesive.

1 42. The product of claim 41, wherein at least one
2 of said adhesive types consists at least in part of a
3 combustion retarding material.

1 43. The product of claim 41, wherein at least one
2 of said adhesive types contains at least one flavoring
3 agent.

1 44. The product of claim 41, wherein the filler
2 consists of cigarette tobacco and a filter mouthpiece.

1 45. The product of claim 41, wherein said section
2 is a convoluted uniting band of tipping paper.

1 46. The product of claim 45, wherein the band has
2 a first annular portion at least partially coated with
3 adhesive containing at least one flavoring agent and a
4 second annular portion at least partially coated with
5 adhesive consisting of or containing a combustion retard-
6 ing material.